

## ABSTRACT OF THE DISCLOSURE

A method for chemically decontaminating radioactive material. The method includes reducing-dissolving step for setting surface of radioactive material in contact with reducing decontamination liquid including mono-carboxylic acid and di-carboxylic acid as dissolvent; and oxidizing-dissolving step for setting the surface of the radioactive material in contact with oxidizing decontamination liquid including oxidizer. The method may include repeated pairs of steps, each pair including the reducing-dissolving step and the oxidizing-dissolving step. The mono-carboxylic acid may include formic acid, and the di-carboxylic acid includes oxalic acid. The oxidizer may be ozone, permanganic acid or permanganate.